

Section 1.7  
Part 2  
Radicals

1)

$$\begin{aligned}\sqrt[4]{80} - 4\sqrt[4]{405} + 2\sqrt[4]{5} &= \sqrt[4]{2^4 \cdot 5} - 4\sqrt[4]{3^4 \cdot 5} + 2\sqrt[4]{5} \\ &= 2\sqrt[4]{5} - 12\sqrt[4]{5} + 2\sqrt[4]{5} \\ &\quad - 8\sqrt[4]{5}\end{aligned}$$

$$\begin{array}{r} 405 \\ \diagdown \quad \diagup \\ 5 \quad 81 \\ \diagdown \quad \diagup \\ 9 \quad 9 \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ 3 \quad 3 \quad 3 \quad 3 \end{array}$$

2)

$$\frac{1}{\sqrt[3]{16}} + \frac{-3}{\sqrt[3]{128}} - \frac{4}{\sqrt[3]{250}} = \frac{1}{\sqrt[3]{2^4}} + \frac{-3}{\sqrt[3]{2^7}} - \frac{4}{\sqrt[3]{2 \cdot 5^3}}$$

$$= \frac{1}{2\sqrt[3]{2}} + \frac{-3}{4\sqrt[3]{2}} - \frac{4}{5\sqrt[3]{2}}$$

$$= \frac{10}{20\sqrt[3]{2}} + \frac{-15}{20\sqrt[3]{2}} - \frac{16}{20\sqrt[3]{2}} \\ = \frac{21}{20\sqrt[3]{2}} - \frac{21}{20\sqrt[3]{2}} = \frac{0}{40}$$

$$20\sqrt[3]{2}$$

$$\frac{1}{20\sqrt[3]{2}} + \frac{-3}{4\sqrt[3]{2}} - \frac{4}{5\sqrt[3]{2}} = \frac{0}{40}$$

3)

$$(\sqrt{6} - \sqrt{3})(\sqrt{6} + \sqrt{3})$$

$$6 + \sqrt{18} - \sqrt{18} - 3$$

$$6 - 3$$

$$3$$

$$(a-b)(a^2+ab+b^2) = (a^3-b^3)$$

$$4) (\sqrt[3]{5}-2)(\sqrt[3]{5^2}+2\sqrt[3]{5}+4) = 5-8 = -3$$

5)

$$(2\sqrt{5} - \sqrt{2})(5\sqrt{2} + \sqrt{5})$$

$$10\sqrt{10} + 10 - 10 - \sqrt{10}$$

$$9\sqrt{10}$$

## Method 1

6)

$$\underbrace{(\sqrt{3}-\sqrt{2})^2}_a \underbrace{(\sqrt{3}+\sqrt{2})^2}_b$$

$$(ab)^2$$

$$a^2 b^2$$

$$\left[ (\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2}) \right]^2$$
$$(3-2)^2$$
$$1^2 = 1$$

6)

Method 2

$$\left(\sqrt{3} - \sqrt{2}\right)^2 \left(\sqrt{3} + \sqrt{2}\right)^2$$



Homework:

Day 2